UNION

"L"

Type

BOILERS

• •

designed for

LIMITED SPACE CONDITIONS

combining

Dry Steam . . . Unrestricted Circulation . . . High Efficiency and Reliability

COMMONWEALTH ELECTRIC CO.

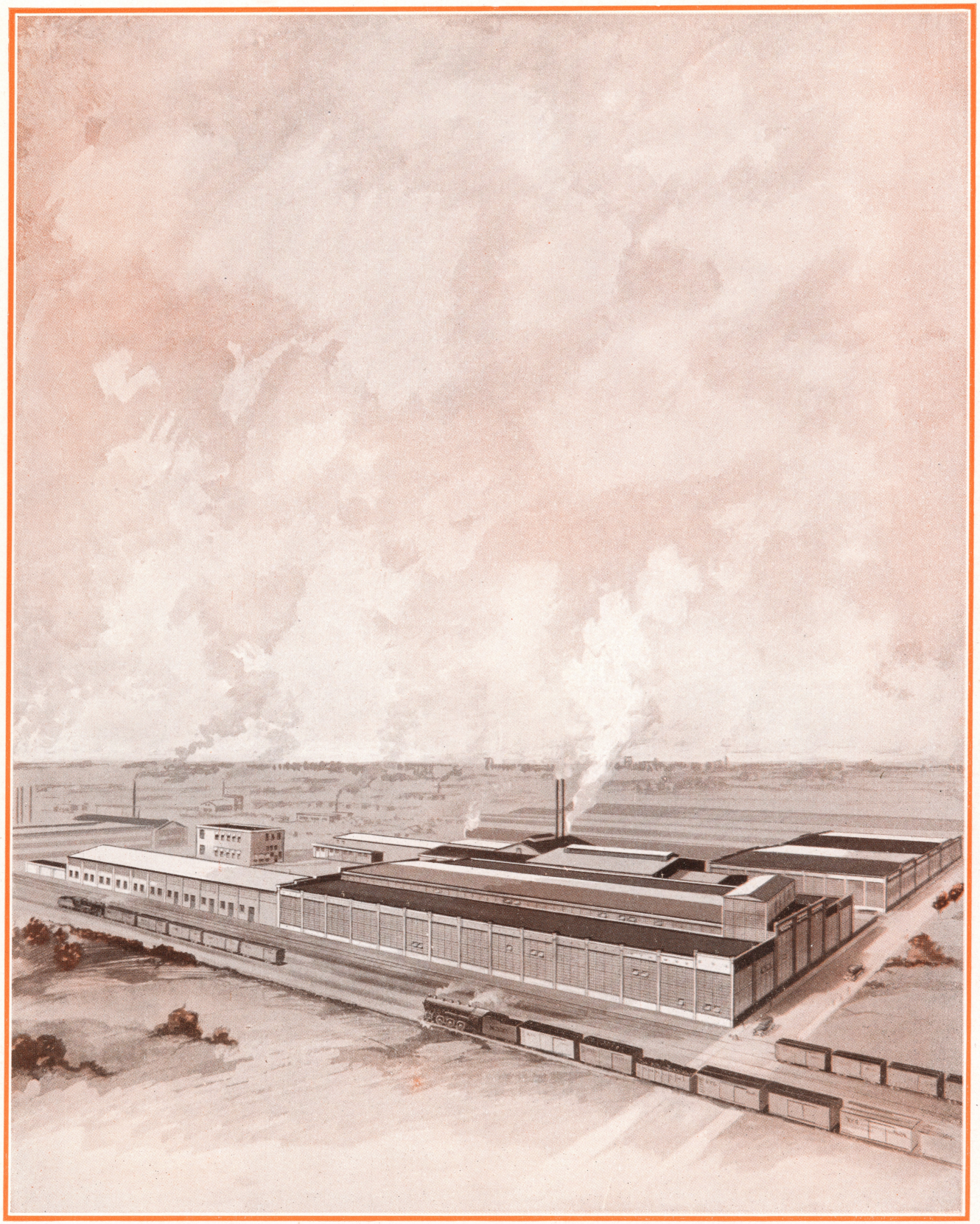
District Representatives

417 Broadway

St. Paul, Minn.

UNION IRON WORKS

ERIE, PA.



UNION IRON WORKS, General Office and Works, ERIE, PA.

Founded in 1890

Today this is one of the largest and most completely equipped plants devoted exclusively to boiler manufacturing.

UNION IRON WORKS ERIE, PA.

UNION "*L-TYPE*" BOILERS

THE Union Iron Works, of Erie, Pennsylvania, has specialized in the manufacture of high pressure steel boilers since 1890 and is one of the largest producers of this class of boilers in the United States. During this period a modern factory has been developed and equipped with special tools and machinery for the particular purpose of building Union Boilers of various types to the highest standards of quality and design.

The Union L-Type Water Tube Boiler is designed for low headroom installations and other space limitations where water tube boilers are best suited for the steam and operating requirements. The original designs of the Union Iron Works for boilers of this type were developed in 1925.

These boilers incorporate all the features necessary for efficient steam generation, such as clearly defined and unrestricted circulation, minimum drum turbulence, complete and unretarded steam liberation in the front drum, crossflow baffling to give the highest rate of heat transfer with minimum draft loss, and other details further described in the following pages.

The L-Type Boiler is built in a number of sizes which will accommodate a wide variation in installation conditions. The settings can be arranged for hand or mechanical firing as well as for gas or oil burning, as shown on pages 5, 6 and 7.

All Union Boilers are constructed of the best material and conform fully with the A. S. M. E. and State Codes. A certificate of shop inspection from a qualified inspection and insurance company is furnished with every boiler.

UNION "*L-TYPE*" BOILERS

DISTINCTIVE FEATURES

of the

Union "*L-Type*" Boiler Design and Construction

Minimum Setting Dimensions and Brickwork

The Union L-Type Boiler is a three-drum bent tube boiler with the drums and tubes arranged to require the minimum in setting dimensions and brickwork, at the same time providing proper gas passage areas. The two upper drums are located on the same horizontal center line, providing the maximum steam disengaging surface and allowing full steam liberation in the front drum without any restriction, which is highly necessary for the production of dry steam.

Unrestricted Circulation

The tubes connecting the lower drum and the upper drums are grouped to give positive unrestricted circulation through the boiler and expose a minimum of the side and rear walls of the setting after the gases enter the tube bank. The two upper drums are also connected by two rows of water carrying tubes, producing a circulation similar to that in Union cross drum boilers, and maintaining a steady water level in both drums at all ratings. The steam passes to the rear drum through circulator tubes carrying only steam, where it receives thorough drying out and some superheat. The main tube bank is inclined, to give free steaming characteristics, and the entire lower row is fully exposed to the direct radiant heat action from the furnace.

Uniform Distribution of Feed Water

The feed water is taken into the upper rear drum and is distributed uniformly over the entire bank of downflow tubes connected to the lower drum. The steam outlet nozzle is located on the upper rear drum and is provided with the Union standard dry pipe.

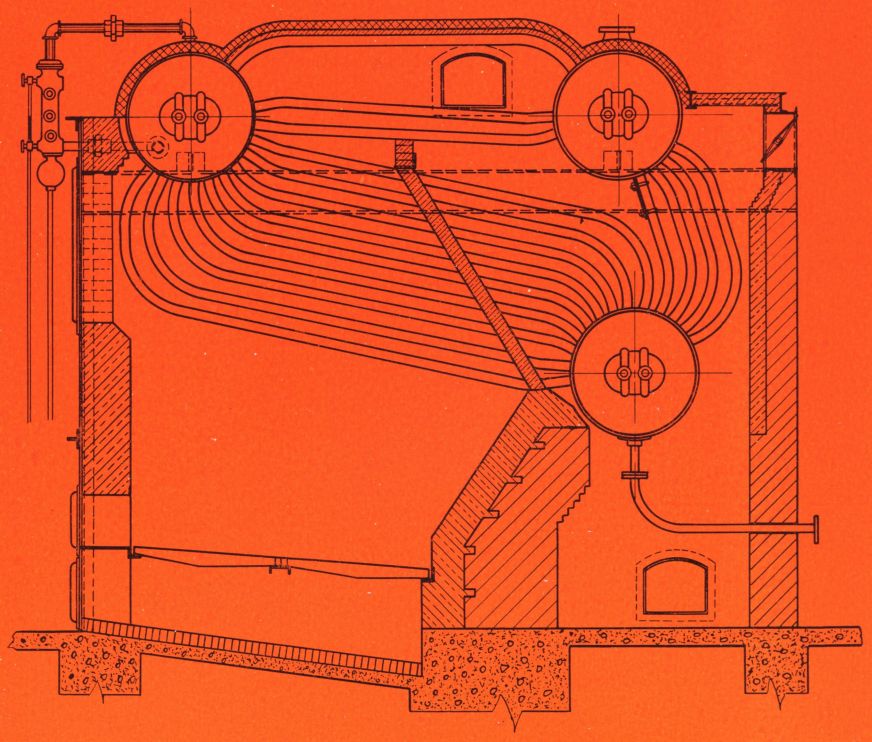
Gas Tight, Monolithic Baffles

Gas tight, inclined monolithic baffles are used, which provide cross flow of the gases through the tube bank. They are arranged to give a minimum draft loss and uniform gas velocity with proper breaking up and impingement of the gases on the tubes, which is desirable for low exit temperatures and high efficiency.

Heating Surfaces

Only those surfaces having water on one side and exposed to the products of combustion on

UNION "*L-TYPE*" BOILERS



UNION IRON WORKS ERIE, PA.

UNION
"L-TYPE" BOILER
equipped with hand fired grates

the other side are calculated as heating surface, as defined by the A. S. M. E. Code. Tubes above the normal water level are not included as heating surface.

Easily Cleaned

All parts of the boiler are accessible for cleaning and flat surfaces or pockets for the lodgment of soot are avoided. Standard size 3¼" tubes are used, facilitating cleaning and replacement.

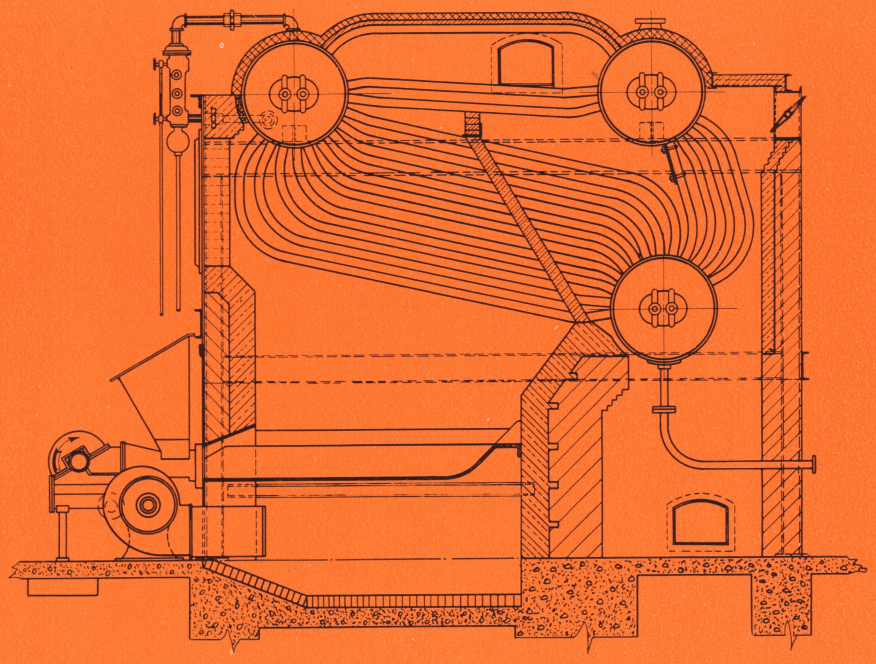
Full Steel Suspension

A full steel suspension construction, consisting of "I" beams and "H" columns, is regularly furnished as standard equipment. For smaller sizes, where the vertical columns may not be required, the boiler is carried on "I" beams extending the length of the setting, which distributes the weight of the boiler uniformly over both side walls. This method is shown above for the hand-fired setting.

Many Sizes Shipped Completely Assembled

Due to the compact design of the L-Type Boiler many sizes can be shipped completely shop assembled, depending upon railroad clearances and installation conditions. When shipped

UNION "*L-TYPE*" BOILERS



UNION
"L-TYPE" BOILER
a typical under-feed stoker setting

assembled the suspension is constructed as shown in the setting above. The boiler is carried in transit in the upper portion of the structural frame and the lower legs are later bolted in place in the field. Boilers which are field assembled are regularly furnished with the suspension illustrated on page 7.

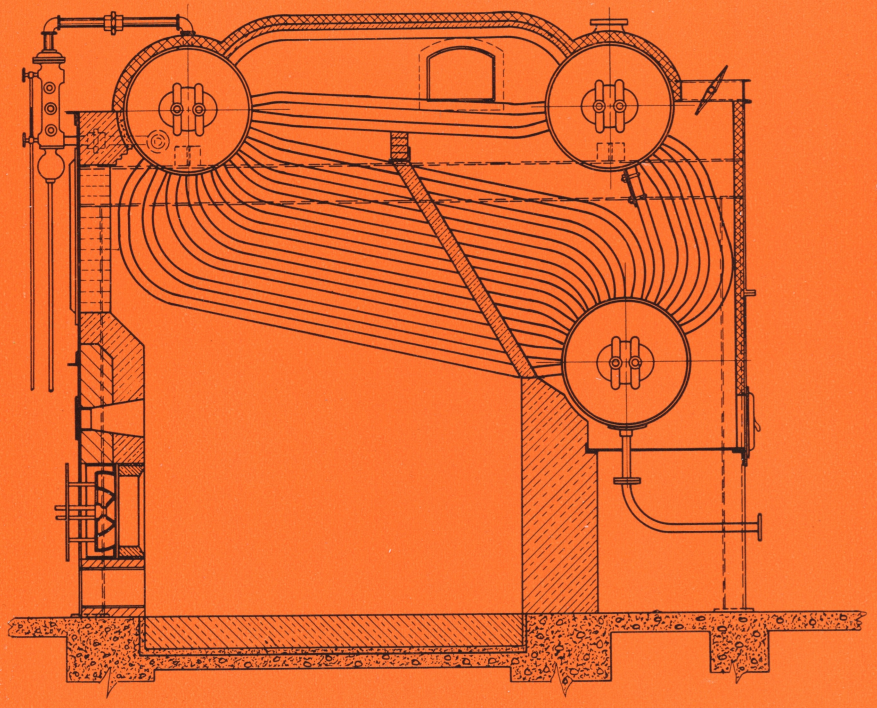
Top or Rear Smoke Outlet

The design of the boiler and baffling provides for either top or rear smoke outlet, as required. When the top smoke outlet is used the stack can be directly connected to the damper box and the entire weight carried by the suspension frame. The rear wall of the setting can be built up of either solid masonry construction or the sectional insulated panel shown on page 7, which reduces the brickwork required and occupies less setting length. This construction is similar to that used on larger installations of Union vertical bent tube boilers. The rear casing is not included as standard equipment and can be furnished at a slight extra cost.

Equipment Furnished with Boiler

The following fixtures are furnished with each

UNION "*L-TYPE*" BOILERS



UNION IRON WORKS
ERIE, PA.

UNION
"L-TYPE" BOILER
equipped for oil or gas firing

boiler: Full steel plate reinforced front with tube removal door, fire and ash doors with liners, dead plate and grates (stoker fired settings are furnished with upper half of front only); steel suspension, consisting of beams, columns, and base plates; access doors; 12″ x 16″ hinged man-hole covers for all boiler drums; fittings consisting of safety valves, high and low alarm water column complete with trimmings, steam gauge, check and globe valves for feed line and blow-off valves.

A set of fire tools, comprising a hoe, poker, and slice bar is furnished with each boiler, or one set for each battery of boilers when grates are included.

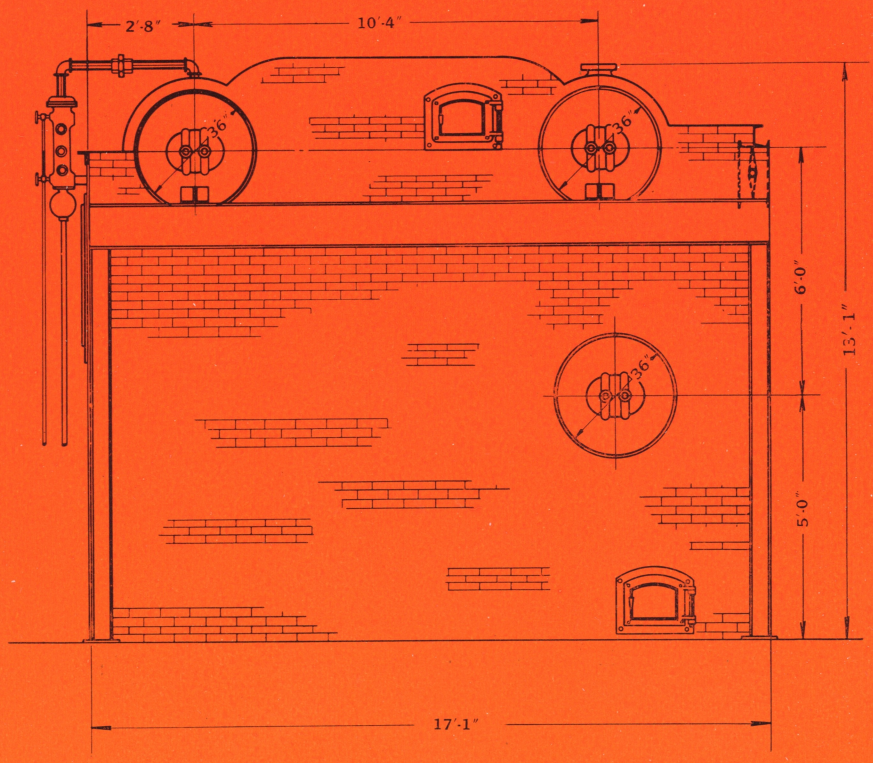
Standard Sizes

The tables given on the following pages give the principal dimensions and engineering data for the standard sizes of L-Type Boilers.

Furnace lengths are not shown, as the inclination of the tube bank makes possible any practical length desired consistent with furnace width.

The overall dimensions can be modified for special space conditions and further information will be furnished upon application.

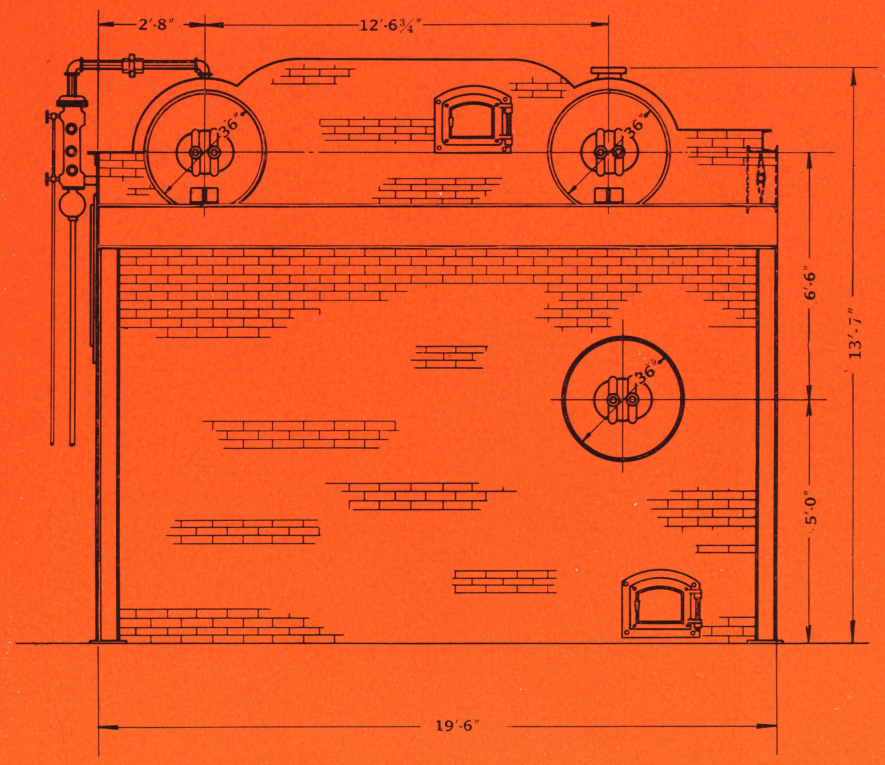
UNION "*L-TYPE*" BOILERS



UNION
***"L-TYPE"* BOILER**
SIZE L-6
115.7 Sq. Ft. Heating Surface per Section

Sections Wide	Heating Surface Sq. Ft.	Furnace Width	Width Single Setting	Width Battery Setting	Steam Outlet	Feed Inlet	Blow-Off	Brick Single Setting		Brick Battery Setting	
								Red	Fire	Red	Fire
8	926	4′-0″	7′-0″	13′-3″	5″	1½″	2″	8100	3600	13970	7200
9	1041	4′-8″	7′-8″	14′-7″	5″	1½″	2″	8220	3720	14200	7440
10	1157	5′-0″	8′-0″	15′-3″	5″	1½″	2″	8330	3840	14430	7680
11	1273	5′-8″	8′-8″	16′-7″	5″	1½″	2″	8450	3960	14660	7920
12	1389	6′-0″	9′-0″	17′-3″	5″	1½″	2″	8560	4080	14890	8160
13	1504	6′-8″	9′-8″	18′-7″	5″	1½″	2″	8680	4200	15120	8400
14	1620	7′-0″	10′-0″	19′-3″	5″	1½″	2″	8790	4320	15350	8640
15	1736	7′-8″	10′-8″	20′-7″	5″	1½″	2″	8910	4440	15580	8880
16	1852	8′-0″	11′-0″	21′-3″	5″	1½″	2″	9020	4560	15810	9120
17	1967	8′-8″	11′-8″	22′-7″	5″	1½″	2″	9140	4680	16040	9360
18	2083	9′-0″	12′-0″	23′-3″	5″	2″	2″	9250	4800	16270	9600
19	2199	9′-8″	12′-8″	24′-7″	5″	2″	2″	9370	4920	16500	9840
20	2315	10′-0″	13′-0″	25′-3″	5″	2″	2″	9480	5040	16730	10080
21	2430	10′-8″	13′-8″	26′-7″	5″	2″	2″	9600	5160	16960	10320
22	2546	11′-0″	14′-0″	27′-3″	5″	2″	2″	9710	5280	17190	10560
23	2662	11′-8″	14′-8″	28′-7″	5″	2″	2″	9830	5400	17420	10800
24	2778	12′-0″	15′-0″	29′-3″	5″	2″	2″	9940	5520	17650	11040

UNION "*L-TYPE*" BOILERS

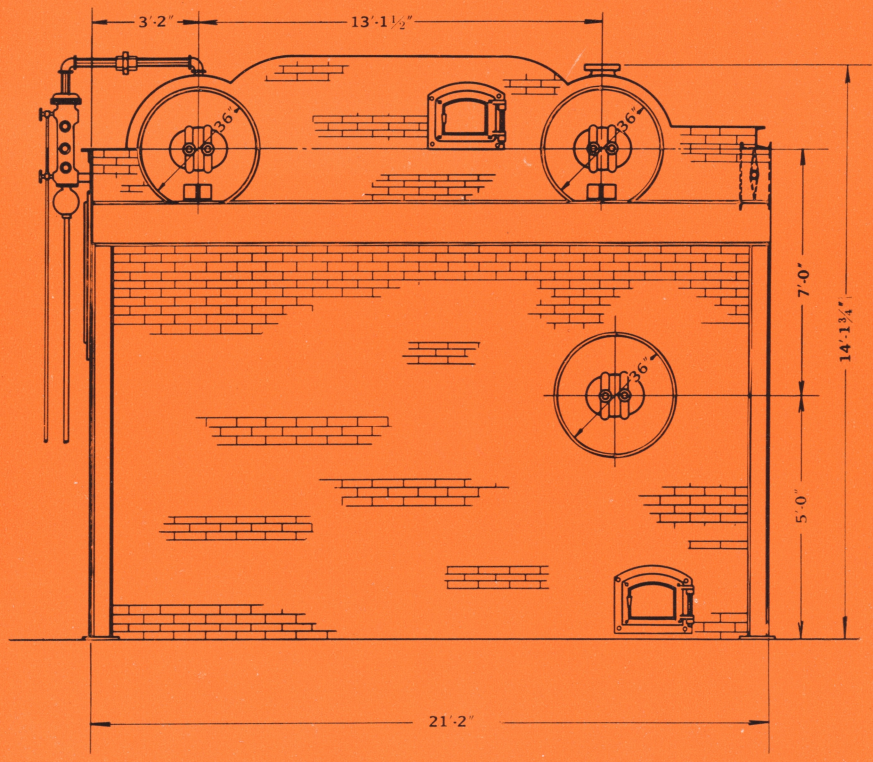


UNION IRON WORKS
ERIE, PA

UNION
***"L-TYPE"* BOILER**
SIZE L-6.5
139.8 Sq. Ft. Heating Surface per Section

Sections Wide	Heating Surface Sq. Ft.	Furnace Width	Width Single Setting	Width Battery Setting	Steam Outlet	Feed Inlet	Blow-Off	Brick Single Setting		Brick Battery Setting	
								Red	Fire	Red	Fire
8	1118	4′-0″	7′-0″	13′-3″	5″	1½″	2″	10770	4630	18670	9260
9	1258	4′-8″	7′-8″	14′-7″	5″	1½″	2″	10890	4760	18920	9520
10	1398	5′-0″	8′-0″	15′-3″	5″	1½″	2″	11010	4890	19170	9780
11	1538	5′-8″	8′-8″	16′-7″	5″	1½″	2″	11130	5020	19420	10040
12	1678	6′-0″	9′-0″	17′-3″	5″	1½″	2″	11250	5150	19670	10300
13	1818	6′-8″	9′-8″	18′-7″	5″	1½″	2″	11370	5280	19920	10560
14	1958	7′-0″	10′-0″	19′-3″	5″	1½″	2″	11490	5410	20170	10820
15	2097	7′-8″	10′-8″	20′-7″	5″	2″	2″	11610	5540	20420	11080
16	2237	8′-0″	11′-0″	21′-3″	5″	2″	2″	11730	5670	20670	11340
17	2377	8′-8″	11′-8″	22′-7″	5″	2″	2″	11850	5800	20920	11600
18	2517	9′-0″	12′-0″	23′-3″	5″	2″	2″	11970	5930	21170	11860
19	2657	9′-8″	12′-8″	24′-7″	5″	2″	2″	12090	6060	21420	12120
20	2797	10′-0″	13′-0″	25′-3″	5″	2″	2″	12210	6190	21670	12380
21	2937	10′-8″	13′-8″	26′-7″	5″	2″	2″	12330	6320	21920	12640
22	3076	11′-0″	14′-0″	27′-3″	5″	2″	2″	12450	6450	22170	12900
23	3216	11′-8″	14′-8″	28′-7″	5″	2″	2″	12570	6580	22420	13160
24	3356	12′-0″	15′-0″	29′-3″	5″	2″	2″	12690	6710	22670	13420

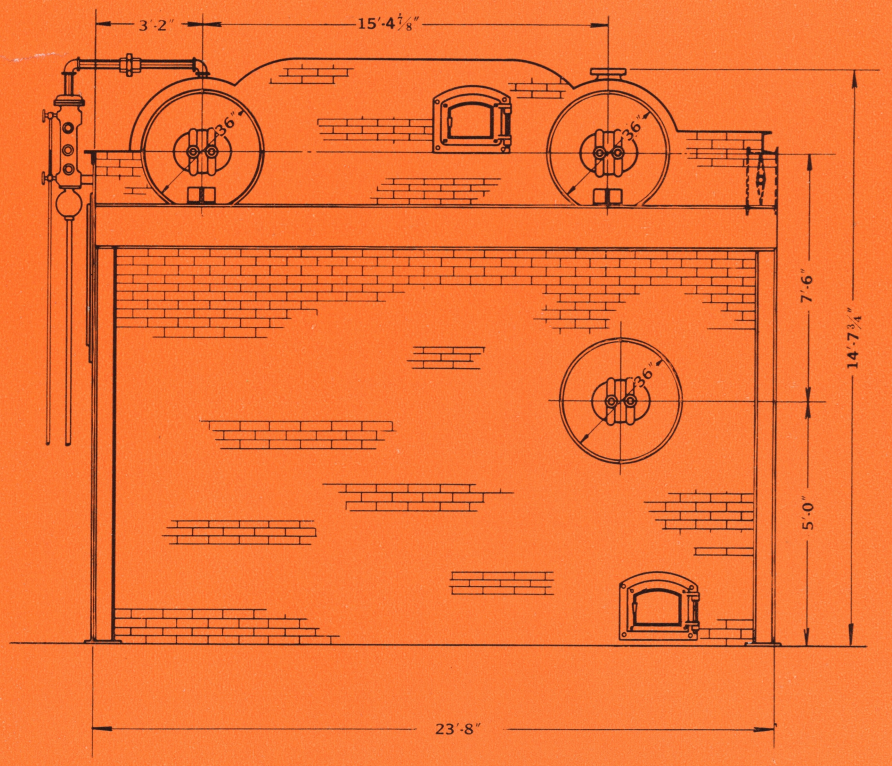
UNION "*L-TYPE*" BOILERS



UNION
***"L-TYPE"* BOILER**
SIZE L-7
167.0 Sq. Ft. Heating Surface per Section

Sections Wide	Heating Surface Sq. Ft.	Furnace Width	Width Single Setting	Width Battery Setting	Steam Outlet	Feed Inlet	Blow-Off	Brick Single Setting		Brick Battery Setting	
								Red	Fire	Red	Fire
8	1336	4′-0″	7′-0″	13′-3″	5″	1½″	2″	10850	5000	18890	10000
9	1503	4′-8″	7′-8″	14′-7″	5″	1½″	2″	10970	5140	19130	10270
10	1670	5′-0″	8′-0″	15′-3″	5″	1½″	2″	11100	5270	19370	10540
11	1837	5′-8″	8′-8″	16′-7″	5″	1½″	2″	11220	5410	19610	10810
12	2004	6′-0″	9′-0″	17′-3″	5″	2″	2″	11350	5540	19850	11080
13	2171	6′-8″	9′-8″	18′-7″	5″	2″	2″	11470	5680	20090	11350
14	2338	7′-0″	10′-0″	19′-3″	5″	2″	2″	11600	5810	20330	11620
15	2505	7′-8″	10′-8″	20′-7″	5″	2″	2″	11720	5950	20570	11890
16	2672	8′-0″	11′-0″	21′-3″	5″	2″	2″	11850	6080	20810	12160
17	2839	8′-8″	11′-8″	22′-7″	5″	2″	2″	11970	6220	21050	12430
18	3006	9′-0″	12′-0″	23′-3″	5″	2″	2″	12100	6350	21290	12700
19	3173	9′-8″	12′-8″	24′-7″	5″	2″	2″	12220	6490	21530	12970
20	3340	10′-0″	13′-0″	25′-3″	5″	2″	2″	12350	6620	21770	13240
21	3507	10′-8″	13′-8″	26′-7″	6″	2½″	2½″	12470	6760	22010	13510
22	3674	11′-0″	14′-0″	27′-3″	6″	2½″	2½″	12600	6890	22250	13780
23	3841	11′-8″	14′-8″	28′-7″	6″	2½″	2½″	12720	7030	22490	14050
24	4008	12′-0″	15′-0″	29′-3″	6″	2½″	2½″	12850	7160	22730	14320

UNION "*L-TYPE*" BOILERS



UNION IRON WORKS
ERIE, PA.

UNION
***"L-TYPE"* BOILER**
SIZE L-7.5
194.0 Sq. Ft. Heating Surface per Section

Sections Wide	Heating Surface Sq. Ft.	Furnace Width	Width Single Setting	Width Battery Setting	Steam Outlet	Feed Inlet	Blow-Off	Brick Single Setting		Brick Battery Setting	
								Red	Fire	Red	Fire
8	1552	4′-0″	7′-0″	13′-3″	5″	2″	2″	12280	5900	21010	11800
9	1746	4′-8″	7′-8″	14′-7″	5″	2″	2″	12400	6050	21260	12090
10	1940	5′-0″	8′-0″	15′-3″	5″	2″	2″	12530	6190	21510	12380
11	2134	5′-8″	8′-8″	16′-7″	5″	2″	2″	12650	6340	21760	12670
12	2328	6′-0″	9′-0″	17′-3″	5″	2″	2″	12780	6480	22010	12960
13	2522	6′-8″	9′-8″	18′-7″	5″	2″	2″	12900	6630	22260	13250
14	2716	7′-0″	10′-0″	19′-3″	5″	2″	2″	13030	6770	22510	13540
15	2910	7′-8″	10′-8″	20′-7″	5″	2″	2″	13150	6920	22760	13830
16	3104	8′-0″	11′-0″	21′-3″	5″	2″	2″	13280	7060	23010	14120
17	3298	8′-8″	11′-8″	22′-7″	5″	2″	2″	13400	7210	23260	14410
18	3492	9′-0″	12′-0″	23′-3″	6″	2½″	2½″	13530	7350	23510	14700
19	3686	9′-8″	12′-8″	24′-7″	6″	2½″	2½″	13650	7500	23760	14990
20	3880	10′-0″	13′-0″	25′-3″	6″	2½″	2½″	13780	7640	24010	15280
21	4074	10′-8″	13′-8″	26′-7″	6″	2½″	2½″	13900	7790	24260	15570
22	4268	11′-0″	14′-0″	27′-3″	6″	2½″	2½″	14030	7930	24510	15860
23	4462	11′-8″	14′-8″	28′-7″	6″	2½″	2½″	14150	8080	24760	16150
24	4656	12′-0″	15′-0″	29′-3″	6″	2½″	2½″	14280	8220	25010	16440

DISTRICT REPRESENTATIVES

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1117 - 15th Street, N. W.

UNION IRON WORKS

ERIE, PENNSYLVANIA

Printed in U. S. A. The Caxton Company, Cleveland